

Docket No.: 109870-130118

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By: Yvette L. Chriscaden Date: December 14, 2005
Yvette L. Chriscaden

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

App. No. : 10/043,949 Confirmation No.: 7485
Inventor : Matthew A. Bellew
Filed : January 10, 2002
Title : MULTI-PART LOOKED-UP TABLE FIELDS AND ITS USE
IN DATA PROCESSING OPERATIONS INVOLVING
MULTIPLE TABLES OF A RELATIONAL DATABASE
Art Unit : 2162
Examiner : Pham, Hung Q.
Customer No. : 25,943

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Alexandria, VA 22313-1450

**APPELLANT'S BRIEF IN SUPPORT OF APPELLANT'S APPEAL
TO THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Dear Sir:

This appeal furthers the Notice of Appeal filed on September 19, 2005. The appeal arises from a final decision by the Examiner in the final Office Action, dated June 17, 2005. The final decision was in response to arguments filed on April 11, 2005, in response to an earlier office action, mailed January 10, 2005.

Appellants submit this *Brief on Appeal* in triplicate, including payment in the amount of \$500.00 to cover the fee for filing the *Brief on Appeal*. Appellants respectfully request

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consideration of this appeal by the Board of Patent Appeals and Interferences for allowance of the present patent application.

Real Party in Interest:

This application is assigned to BEA Systems, Inc., having a principal place of business at 2315 North First Street, San Jose, California 95131 by virtue of an assignment recorded with the United States Patent and Trademark Office on November 12, 2004, at Reel 015977 Frame 0731.

Related Appeals and Interferences:

To the best of Appellants' knowledge, there are no related appeals or interference proceedings currently pending, which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims:

Appellants appeal the rejection of claims 1-5, 7, 8, 20-24, 26, and 27. Claims 1-38 were pending and claims 1-5, 7, 8, 20-24, 26, and 27 were rejected in the Final Office Action dated July 12, 2005. Claims 6 and 25 were objected to as depending upon a rejected base claim. Claims 1-38 are reproduced, as pending, in Appendix A.

Summary of the Claimed Subject Matter:

As stated in the second paragraph on page 1 of the specification of the instant application, the invention relates to data processing techniques associated with data processing operations involving multiple tables of a relational database. A software component (generator **106**) is equipped to identify non-looked-up table fields and looked-up table fields **216** with their rows to be grouped, and table fields having aggregate functions to be performed in their row values in a data processing statement, and in response, automatically includes with a SQL statement **110** a subquery to create a grouped derivative table comprising the non-looked-up fields with their rows grouped and the aggregate fields with their row values aggregated, and one or more appropriate

JOIN clauses joining one or more target tables **212** from which the looked-up table fields **216** are to be looked up with the grouped derivative table, effectively grouping the rows of the looked-up fields **216** also. The SQL statement **110** may e.g. be an INSERT, a SELECT, an UPDATE, and a DELETE statement. In one embodiment, the looked-up table fields **216** are expressed in a multi-part form comprising a first part corresponding to a look-up table field **204**, and a second part corresponding to a looked-up table field **216**, concatenated to the first part using a predetermined special character. In accordance with a second aspect, a software component **106** is equipped to automatically expand table fields available for inclusion in a data processing operation to include table fields of a target table **212** of a look-up table field **204**, in response to the selection of the look-up table field **204**, and to facilitate selection of aggregate function. In one embodiment, the second aspect is practiced in conjunction with the automatic inclusion of subquery and appropriate JOIN clauses to a SQL statement **110** of the first aspect.

Grounds For Rejection To Be Argued On Appeal:

- I. Claims 1-4, 8, 20-23, and 27 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,748,378 to *Madan, et al.* (hereinafter “Madan”).
- II. Claims 5, 7, 24, and 26 stand rejected under 35 U.S.C. §103(a) over the teachings of Madan, as applied to claims 1, 4, and 20, and further in view of *Database System Concepts*, third edition, by Silberschatz, et al. (hereinafter “Silberschatz”).

Grouping of Claims

For purposes of this appeal, based on the above listed grounds of rejection and their current pending states, claims 1-5, 7, 8, 20-24, and 26-27 stand or fall together. Of the other pending claims, claims 9-19 and 28-38 are cancelled and also stand or fall with the above claims, and claims 6 and 25 are objected to solely for depending upon a rejected base claim.

Arguments:

- I. Rejection of claims 1-4, 8, 20-23, and 27 under 35 U.S.C. §102(e) was improper because Madan fails to anticipate the claimed invention as claimed in claims 1-4, 8, 20-23, and 27.

It is well settled that anticipation under 35 U.S.C. §102 requires the disclosure in a single piece of prior art to teach **each and every** limitation of a claimed invention. *Electro Med. Sys. S.A. v. Cooper Life Sciences*, 34 F.3d 1048, 1052, 32 USPQ2d 1017, 1019 (Fed. Cir. 1994). . MPEP 2131 states, "TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM" and "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Furthermore, anticipation requires that each claim element must be identical to a corresponding element in the applied reference. *Glaverbel Société Anonyme v. Northlake Mktg & Supply, Inc.*, 45 F.3d 1550, 1554 (Fed. Cir. 1995). Thus, to anticipate the present invention, Madan must disclose every element recited in the pending claims.

Claim 1 calls for a method comprising:

- parsing on a computing system a data processing statement;
- identifying on a computing system table field or fields referenced in said data processing statement, including whether an aggregation operation is to be performed on row values of each of the identified table fields;
- for each identified table field, determining on a computing system whether the table field is a looked-up field;
- identifying on a computing system a basis table of which non-looked up ones of said identified table field or fields are members;

identifying on a computing system one or more target tables from which
said looked-up one or ones of said identified table field or fields are
to be looked up; and
generating on a computing system a SQL statement, including with said
generated SQL statement a FROM clause having a subquery
creating a grouped derivative table comprising grouped non-looked-
up table fields and aggregated table fields, and one or more JOIN
clauses joining the corresponding one or more target tables to the
grouped derivative table, if the data processing statement is
determined to contain first one or more table fields to have
aggregation operations performed on their row values.

In contrast, Madan discloses a “method for generating a relational database
query statement using one or more templates corresponding to search conditions in an
expression tree”. Assuming *arguendo* that an expression tree may be considered as a
data processing statement, and parsing of the expression tree may be considered as
parsing of a data processing statement (a contention with which Applicant disagrees,
but which does not need to be addressed at this time), Madan nonetheless fails to teach

identifying on a computing system table field or fields referenced in said data
processing statement, including whether an aggregation operation is to be
performed on row values of each of the identified table fields;
for each identified table field, determining on a computing system whether the
table field is a looked-up field;
identifying on a computing system a basis table of which non-looked up ones of
said identified table field or fields are members;
identifying on a computing system one or more target tables from which said
looked-up one or ones of said identified table field or fields are to be
looked up.

Accordingly, it follows that Madan fails to teach the generation of a SQL statement based on the above enumerated analyses.

It further follows that Madan fails to teach the required generation, when the data processing statement is determined to contain first one or more table fields to have aggregation operations performed on their row values,

where the generated SQL statement is required to have a FROM clause

where the FROM clause has a subquery

where the subquery creates a grouped derivative table comprising grouped non-looked-up table fields and aggregated table fields, and

one or more JOIN clauses are used to join the corresponding one or more target tables to the grouped derivative table.

Additionally, in the penultimate paragraph on page 8, and in the discussion on pages 10 and 11, the Office Action appears to improperly equate the use of UNION in Madan with "JOIN" clauses as recited in claim 1 of the instant application. Any person of ordinary skill in the art of SQL will understand the meanings of the two terms to be distinct and different.

Accordingly, claim 1 is patentable over Madan under § 102(e).

Claim 20 contains in substance the same recitations earlier discussed for claim 1, directed towards an apparatus of that claim. Therefore, for at least the same reasons, claim 20 is patentable over Madan.

Claims 2-4, 8, 21-23, and 27 depend from claims 1 and 20, incorporating their limitations respectively. Accordingly, for at least the same reasons, claims 2-4, 8, 21-23, and 27 are patentable over Madan.

- II. Rejection of claims 5, 7, 24, and 26, under 35 U.S.C. §103(a) was improper because Madan and Silberschatz, alone or in combination, fail to teach the claimed invention when the invention as claimed in claims 5, 7, 24, and 26 is viewed as a whole.

Silberschatz does not remedy the above-discussed deficiencies of Madan. Therefore, claims 1 and 20 remain patentable over Madan even when combined with Silberschatz.

Claims 5, 7, 24, and 26 depend on claims 1 and 20, incorporating their limitations respectively. Therefore, for at least the same reasons, Claims 5, 7, 24, and 26 are patentable over Madan and Silberschatz, alone or in combination.

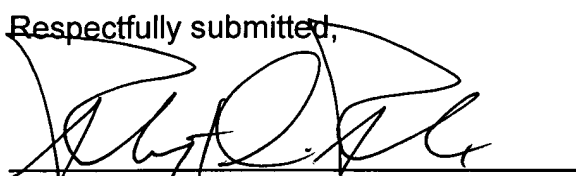
Conclusion

Appellant respectfully submits that all the appealed claims in this application are patentable and requests that the Board of Patent Appeals and Interferences overrule the Examiner and direct allowance of the rejected claims.

This brief is re-submitted in triplicate, along with Check Number 13539 for \$620.00 to cover the filing of appeal brief and the one month extension fee. We do not believe any additional fees, in particular extension of time fees, are needed. However, should that be necessary, please charge our deposit account 500393. In addition, please charge any shortages and credit any overages to Deposit Account No. 500393.

Date: December 14, 2005

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'R. C. Peck', is written over a horizontal line.

Robert C. Peck, Reg. No. 56,826
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Appendix A – Appealed Claims

1. (Previously Presented) A method comprising:
 - parsing on a computing system a data processing statement;
 - identifying on a computing system table field or fields referenced in said data processing statement, including whether an aggregation operation is to be performed on row values of each of the identified table fields;
 - for each identified table field, determining on a computing system whether the table field is a looked-up field;
 - identifying on a computing system a basis table of which non-looked up ones of said identified table field or fields are members;
 - identifying on a computing system one or more target tables from which said looked-up one or ones of said identified table field or fields are to be looked up; and
 - generating on a computing system a SQL statement, including with said generated SQL statement a FROM clause having a subquery creating a grouped derivative table comprising grouped non-looked-up table fields and aggregated table fields, and one or more JOIN clauses joining the corresponding one or more target tables to the grouped derivative table, if the data processing statement is determined to contain first one or more table fields to have aggregation operations performed on their row values.
2. (Original) The method of claim 1, wherein said determining of whether a table field is a looked-up field comprises determining whether the table field is a multi-part table field including at least a first part corresponding to a look-up field, and a second part corresponding to a field to be looked up, concatenated with said first part in a predetermined manner.

3. (Original) The method of claim 2, wherein said determining of whether a table field is a looked-up field further comprises upon determining that the table field is a multi-part table field, determining whether the second part is a look-up field, with a third part corresponding to a looked up field concatenated with said second part in a predetermined manner.
4. (Original) The method of claim 2, wherein said second part corresponding to a field to be looked up, is concatenated with said first part corresponding to a look-up field, employing one or more predetermined special characters.
5. (Previously Presented) The method of claim 4, wherein said conditional generating of a SQL statement, when performed, comprises generating said subquery in a form of a SELECT statement enumerating identified table fields of said basis table, including aggregation functions to be performed on applicable ones of the identified table fields, including with said SELECT statement a first FROM clause enumerating said basis table, and a GROUP BY clause enumerating again said enumerated table field or fields of the basis table that have not been identified as having aggregation functions to be performed.
6. (Previously Presented) The method of claim 5, wherein said conditional generating of a SQL statement, when performed, further comprises enumerating field or fields to be selected from said grouped derivative table and said one or more target tables, a second FROM clause enumerating said subquery, an AS clause enumerating an identifier of the grouped derivative table, and said one or more JOIN clauses .

7. (Previously Presented) The method of claim 1, wherein said aggregation operation is a selected one of a counting function (COUNT), a minimum value identification function (MIN), a maximum value identification function (MAX), and average value computing function (AVG) and a value summation function (SUM).
8. (Original) The method of claim 1, wherein said SQL statement is a selected one of a SELECT, an INSERT, an UPDATE and a DELETE statement.
9. (Withdrawn) A method comprising:
 - presenting a first plurality of fields of a first table for selection for use in a data processing operation;
 - receiving a selection of a first field that is a member of said first fields;
 - determining whether said selected first field is a first designated look-up field for looking up first one or more of a second plurality of fields of a second table;
 - presenting said second plurality of fields for selection for use in said data processing operation, if it is determined that that said selected first field is a first designated look-up field for looking up first one or more of said second plurality of fields of said second table;
 - receiving a request to perform an aggregation function on a selected one of said first and second plurality of fields; and
 - presenting a plurality of aggregation functions for selection.
10. (Withdrawn) The method of claim 9, wherein each of said second plurality of fields is presented in a multi-part form, including a first part, said first look-up field, and a second part, a corresponding one of the second one or more fields to be looked up, concatenated with said first part in a predetermined manner.
11. (Withdrawn) The method of claim 9, wherein said method further comprises
 - receiving a selection of a second field that is a member of said second fields;

determining whether said selected second field is a second designated look-up field for looking up second one or more of a third plurality of fields of a third table; and

presenting said third plurality of fields for selection if it is determined that said selected second field is a second designated look-up field for looking up second one or more of said third plurality of fields of said third table.

12. (Withdrawn) The method of claim 11, wherein

each of said second plurality of fields is presented in a multi-part form, including a first part, said first look-up field, and a second part, a corresponding one of said first one or more fields to be looked up, concatenated with said first part in a predetermined manner; and

each of said third plurality of fields is presented in a multi-part form, including said first and second parts, and a third part, a corresponding one of said second one or more fields to be looked up, concatenated with said second part in a predetermined manner.

13. (Withdrawn) The method of claim 10, wherein said second part, a corresponding one of said first one or more fields to be looked up, concatenated with said first part, said first look-up field, employing one or more predetermined special characters.

14. (Withdrawn) The method of claim 9, wherein the method further comprises generating a SQL statement, including with said generated SQL statement a FROM clause having a subquery creating a grouped derivative table comprising grouped non-looked-up fields and aggregated fields, and one or more JOIN clauses joining corresponding one or more target tables of one or more looked-up fields to the grouped derivative table, if one or more selected fields are to have aggregation operations performed on their row values.

15. (Withdrawn) The method of claim 14, wherein said conditional generating of a SQL statement, when performed, comprises generating said subquery in a form of a

SELECT statement enumerating selected fields of said basis table, including the aggregation functions to be performed on applicable ones of the selected fields, including with said SELECT statement a first FROM clause enumerating said basis table, and a GROUP BY clause enumerating again said enumerated selected field or fields of the basis table that have not have aggregation functions selected for performance on their row values.

16. (Withdrawn) The method of claim 15, wherein said conditional generating of a SQL statement, when performed, further comprises enumerating selected field or fields to be selected from said grouped derivative table and said one or more target tables, a second FROM clause enumerating said subquery, an AS clause enumerating an identifier of the grouped derivative table, and said one or more JOIN clauses respectively joining said grouped derivative table and said one or more target tables.

17. (Withdrawn) The method of claim 15, wherein said aggregation function is a selected one of a counting function (COUNT), a minimum value identification function (MIN), a maximum value identification function (MAX), an average value computing function (AVG) and a value summation function (SUM).

18. (Withdrawn) The method of claim 15, wherein said SQL statement is a selected one of a SELECT, an INSERT, an UPDATE and a DELETE statement.

19. (Withdrawn) The method of claim 9, wherein the method further comprises specifying said first plurality of fields of said first table; and designating one or more of said specified first fields as look-up fields; and specifying target tables for said designated look-up fields.

20. (Original) An apparatus comprising:
storage medium having stored therein programming instructions, when executed, operate the apparatus to

parse a data processing statement,
identify table field or fields referenced in said data processing statement,
including whether an aggregation operation is to be performed on row
values of each of the identified table fields,
determine, for each identified table field, whether the table field is a
looked-up field,
identify a basis table of which non-looked up ones of said identified table
field or fields are members,
identify one or more target tables from which said looked-up one or ones
of said identified table field or fields are to be looked up, and
generate a SQL statement, including with said generated SQL statement
a FROM clause having a subquery creating a grouped derivative
table comprising grouped table fields and aggregated table fields,
and one or more JOIN clauses joining the corresponding one or
more target tables to the grouped derivative table, if the data
processing statement is determined to contain first one or more
table fields to have aggregation operations performed on their row
values; and

one or more processors coupled to the storage medium to execute the
programming instructions.

21. (Original) The apparatus of claim 20, wherein said programming instructions, when executed, enable the apparatus to determine whether a table field is a looked-up field by determining whether the table field is a multi-part table field including at least a first part corresponding to a look-up field, and a second part corresponding to a field to be looked up, concatenated with said first part in a predetermined manner.

22. (Original) The apparatus of claim 21, wherein said programming instructions, when executed, enable the apparatus to, upon determining that the table field is a multi-part table field, determine whether the second part is also a look-up field, with a third part corresponding to a looked up field concatenated with said second part in a predetermined manner.

23. (Original) The apparatus of claim 22, wherein said second part corresponding to a field to be looked up, is concatenated with said first part corresponding to a look-up field, employing one or more predetermined special characters.

24. (Previously Presented) The apparatus of claim 20, wherein said programming instructions, when executed, enable the apparatus to perform said conditional generating of a SQL statement by generating said subquery in a form of a SELECT statement enumerating identified table fields of said basis table, including aggregation functions to be performed on applicable ones of the identified table fields, including with said SELECT statement a first FROM clause enumerating said basis table, and a GROUP BY clause enumerating again said enumerated table field or fields of the basis table that have not been identified as having aggregation functions to be performed.

25. (Previously Presented) The apparatus of claim 24, wherein said programming instructions, when executed, further enable the apparatus to enumerate field or fields to be selected from said grouped derivative table and said one or more target tables, a second FROM clause enumerating said subquery, an AS clause enumerating an

identifier of the grouped derivative table, and said one or more JOIN clauses, to conditionally generate said SQL statement.

26. (Previously Presented) The apparatus of claim 20, wherein said aggregation operation is a selected one of a counting function (COUNT), a minimum value identification function (MIN), a maximum value identification function (MAX), an average value computing function (AVG) and a value summation function (SUM).

27. (Original) The apparatus of claim 20, wherein said SQL statement is a selected one of a SELECT, an INSERT, an UPDATE and a DELETE statement.

28. (Withdrawn) An apparatus comprising:
storage medium having stored therein a plurality of programming instructions, when executed, operate the apparatus to
present a first plurality of fields of a first table for selection for use in a data processing operation,
receive a selection of a first field that is a member of said first fields,
determine whether said selected first field is a first designated look-up field for looking up first one or more of a second plurality of fields of a second table,
present said second plurality of fields for selection for use in said data processing operation, if it is determined that that said selected first field is a first designated look-up field for looking up first one or more of said second plurality of fields of said second table,
receive a request to perform an aggregation function on a selected one of said first and second plurality of fields, and

present a plurality of aggregation functions for selection; and
at least one processor coupled to the storage medium to execute the programming instructions.

29. (Withdrawn) The apparatus of claim 28, wherein said programming instructions, when executed, operate the apparatus to present each of said second plurality of fields in a multi-part form, including a first part, said first look-up field, and a second part, a corresponding one of said first one or more fields to be looked up, concatenated with said first part in a predetermined manner.

30. (Withdrawn) The apparatus of claim 29, wherein said programming instructions, when executed, further operate the apparatus to
receive a selection of a second field that is a member of said second fields;
determine whether said selected second field is a second designated look-up field for looking up second one or more of a third plurality of fields of a third table; and
present said third plurality of fields for selection if it is determined that said selected second field is a second designated look-up field for looking up second one or more of said third plurality of fields of said third table.

31. (Withdrawn) The apparatus of claim 30, wherein said programming instructions, when executed, operate the apparatus to present
each of said second plurality of fields is presented in a multi-part form, including
a first part, said first look-up field, and a second part, a corresponding one of said first one or more fields to be looked up, concatenated with said first part in a predetermined manner; and

each of said third plurality of fields is presented in a multi-part form, including said first and second parts, and a third part, a corresponding one of said second one or more fields to be looked up, concatenated with said second part in a predetermined manner.

32. (Withdrawn) The apparatus of claim 29, wherein said second part, a corresponding one of said first one or more fields to be looked up, is concatenated with said first part, said look-up field, employing one or more predetermined special characters.

33. (Withdrawn) The apparatus of claim 28, wherein said programming instructions, when executed, further enable the apparatus to generating a SQL statement, including with said generated SQL statement a FROM clause having a subquery creating a grouped derivative table comprising non-looked-up fields and aggregated fields, and one or more JOIN clauses joining corresponding one or more target tables of one or more looked-up fields to the grouped derivative table, if one or more selected fields are to have aggregation operations performed on their row values.

34. (Withdrawn) The apparatus of claim 33, wherein the programming instructions, when executed, enable the apparatus to perform said conditional generation of a SQL statement by generating said subquery in a form of a SELECT statement enumerating selected fields of said basis table, including the aggregation functions to be performed on applicable ones of the selected fields, including with said SELECT statement a first FROM clause enumerating said basis table, and a GROUP BY clause enumerating

again said enumerated selected field or fields of the basis table that have not have aggregation functions selected for performance on their row values.

35. (Withdrawn) The apparatus of claim 34, wherein the programming instructions, when executed, enable the apparatus to enumerate selected field or fields to be selected from said grouped derivative table and said one or more target tables, a second FROM clause enumerating said subquery, and AS clause enumerating an identifier of the grouped derivative table, and said one or more JOIN clauses respectively joining said grouped derivative table and said one or more target tables.

36. (Withdrawn) The apparatus of claim 28, wherein said aggregation function is a selected one of a counting function (COUNT), a minimum value identification function (MIN), a maximum value identification function (MAX), an average value computing function (AVG) and a value summation function (SUM).

37. (Withdrawn) The apparatus of claim 24, wherein said SQL statement is a selected one of a SELECT, an INSERT, an UPDATE and a DELETE statement.

38. (Withdrawn) The apparatus of claim 28, wherein the programming instructions, when executed, further operate the apparatus to
specify said first plurality of fields of said first table,
designate one or more of said specified first fields as look-up fields, and
specify target tables for said designated look-up fields.

Appendix B – Copies of Evidence Submitted

No evidence has been submitted under 37 C.F.R. 1.130, 1.131, or 1.132. No evidence entered by Examiner has been relied upon by Appellants in the appeal.